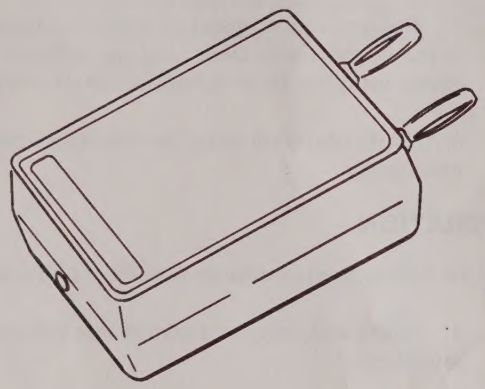

Instruction Sheet

Model Y8104

Thermocouple Termination

WARNING

TO AVOID ELECTRICAL SHOCK DO NOT USE THIS TERMINATION WHEN VOLTAGES EXCEEDING 30V AC RMS OR 60V DC ARE PRESENT. THE PROBE TIP MAY BE CONNECTED TO THE OUTPUT TERMINALS.

INTRODUCTION

The Model Y8104 Thermocouple Termination accessory provides isothermal termination for any thermocouple that is to be connected to an instrument with a double banana input terminal configuration. The isothermal nature of the Y8104 ensures that there is no temperature difference between the junctions created by the instrument and the connection of the thermocouple to the terminals.

Specifications

Dual Banna Plug Spacing: 0.75 inch
Maximum Thermocouple Wire Size: #14

Instrument Compatibility

The Y8104 is designed to be used with voltmeters and multimeters that have dual banana female input jacks spaced at 0.75 inch and built-in reference junction compensation. The compensation is accomplished by the fact that the thermocouple wires are connected directly to the male banana plugs inside the probe's terrmination housing. When plugged into a voltmeter and multimeter, the termination housing provides thermal isolation from the surrounding environment so that the male plugs (and thermocouple connections) can assume the same temperature as the voltmeter or multimeter input jacks. The compensation circuit inside the voltmeter or multimeter senses the temperature of the input jacks and corrects the output reading for varying ambient temperatures. If the probe termination has been stored at a temperature that is different from the voltmeter or multimeter, a stabilization period of several seconds will be required after the probe is connected.

Assembly Instructions

1. Remove the three screws connecting the case covers and separate the covers.

2. Strip sufficient insulation from the end of the thermocouple wire to allow a good connection.

3. Attach the thermocouple wire to the termination board as follows:

   a. For small wire, install the grommet over the wire and then thread the wire down through the end hole and up through the side hole as shown in Figure 1.

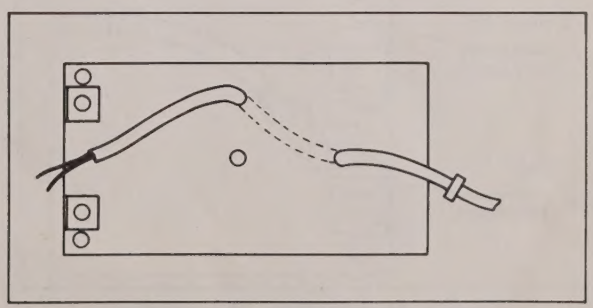

Figure 1. Small Wire Installation

b. For large wire, attach the wire using cable ties as shown in Figure 2.

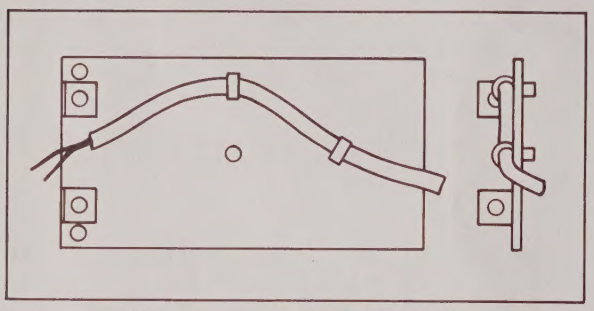

Figure 2. Large Wire Installation

4. Connect the wire to the output terminals as follows:

a. Solid wire #22 or smaller may be connected directly under the banana plugs. Assemble the banana plug, washer and nut as shown in Figure 3 (see polarity note below.)

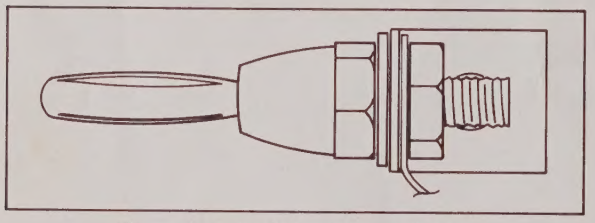

Figure 3. Solid Wire 22 Installation

b. Stranded wire, or solid wire #20 or larger, must be connected using the crimp terminals. Bend the crimp terminals at right angles, then crimp the wire to the terminal with a proper tool. Assemble as shown in Figure 4.

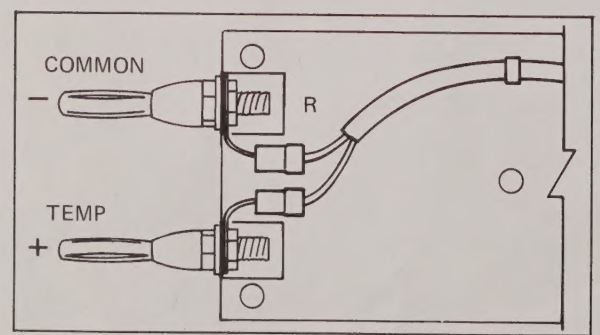

Figure 4. Stranded Wire 20 Installation

NOTE

The terminal marked R corresponds to the red wire of a K-type thermocouple. This is the negative or "common" output terminal.

5. Position the grommet (if used) to engage the notch in the lower cover and assembly the two covers using the three-thread forming screws.

6. Verify operation using the following operation procedure.

OPERATION

Use the following procedure to operate the Y8104:

1. Select and energize a compatible voltmeter or multimeter.

2. Connect the probe to the voltmeter or multimeter input terminals designated for temperature function.

3. Select the temperature function.

4. Select the temperature range.

5. With no heat source applied to the probe tip, the local ambient temperature should be displayed on the voltmeter or multimeter. If not, see the troubleshooting section below to locate the difficulty.

TROUBLESHOOTING

When proper temperature readings cannot be obtained, use the following procedure to isolate the difficulty:

1. Voltmeter/Multimeter Operation

a. Verify both function and range selection on the voltmeter/multimeter.

b. Verify that the thermocouple is connected to the correct input terminals with proper polarity.

c. On voltmeter/multimeters using the mA input for the temperature function, check the mA fuse.

d. Remove the thermocouple and insert a pair of test leads into the temperature input terminals. Short the test leads together and observe the display. If the previous steps have been completed and the voltmeter/multimeter is functioning properly, the display will indicate ambient room temperature when the leads are shorted together.

2. Thermocouple Operation

a. Connect the thermocouple to the k ohm input terminals. Select the k ohm function, 200 ohm range and observe the reading. A typical thermocouple will indicate a resistance of less than 10 ohms.

b. Select dc volts function, 200 mV range and observe the display. With the probe tip at ambient temperature, the thermocouple output voltage should be very near zero.

c. Grasp the probe tip with your finger tips. The display should indicate a few tenths of a millivolt positive polarity.

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